

Shaw Direct Self Install Manual Supplement

STOP! READ THIS FIRST!

This package contains:

- 1) Introduction (this page)
- 2) Appendix A: 75 cm E-Dish Assembly Instructions
- 3) Appendix B: “xKu” LNBF Activation Instructions
- 4) Shaw Direct Dual Satellite Installation Manual

Self Installation Explained:



Self Installation of your Shaw Direct system can be broken down into three (3) basic steps:

- 1) **Dish Assembly** consists of assembling the pieces provided to form a complete satellite dish.
- 2) **Dish Installation** involves locating suitable mounting locations, finding the satellite in relation to your surroundings, and physically attaching the dish to your structure.
- 3) **Connecting the Receiver** consists of connecting your Shaw Direct satellite receiver to the dish, tuning to the correct channel, and fine-tuning the dish based on the satellite signal readings provided.

Depending on the size of your dish and your LNBF type, steps 1 and 3 may vary from what is described in the main Shaw Direct Dual Satellite Installation Manual. This is where Appendix A and B will be used.

How to Proceed:

- 1) Identify your dish size:

□ 60 cm Dish (measures ~32"x18")	□ 75 cm Dish (measures ~36"x26")
	

- 2) Identify your LNBF type by referring to the “Output Frequency” on the sticker affixed to it:

“Quad” LNBF (Output Frequency: 950-1450 MHz)	“xKu” LNBF (Output Frequency: 950-2150 MHz)
<div>0KHz/Sat A SHAW DIRECT Sat B/22KHz</div> <div>DUAL SATELLITE QUAD OUTPUT SWITCHABLE Ku LNBF</div> <div>MODEL NAME : STAR75-ASC-001</div> <div>INPUT FREQUENCY : 11.7 - 12.2 GHz</div> <div>OUTPUT FREQUENCY : 950-1450 MHz (Non-stacked)</div> <div>LINEAR POLARIZATION : VERTICAL 10.5 - 14.2 V</div> <div>FOR USE WITH 75E DISH ONLY Made in China</div>	<div>0 kHz/Sat A SHAW DIRECT Sat B/ 22 kHz</div> <div>DUAL SATELLITE QUAD OUTPUT SWITCHABLE Ku LNBF</div> <div>MODEL NAME : SHAW75E - SKW 3112 298 04451</div> <div>INPUT FREQUENCY : 11.023 - 12.223 GHz</div> <div>OUTPUT FREQUENCY : 950 - 2150 MHz (Non-stacked)</div> <div>LINEAR POLARIZATION : VERTICAL 10.5 - 14.3V</div> <div>FOR USE WITH 75E DISH ONLY Made in China</div>

- 3) Refer to the following chart to determine which instructions to follow in order to facilitate your Self Installation:

	60 cm dish Quad LNB	60 cm dish xKu LNB	75 cm dish Quad LNB	75 cm dish xKu LNB
1. Dish Assembly	Section “3. Dish Assembly” in Dual Satellite Installation Manual.		Appendix A: 75 cm E-Dish Assembly Instructions.	
2. Dish Installation	Section “4. Locating the Satellite” and “5. Attaching the Dish” in Dual Satellite Installation Manual.			
3. Connecting the Receiver	Section “6. Connecting Receiver and Dish” in Dual Satellite Installation Manual.	Appendix B: “xKu” LNB Activation Instructions	Section “6. Connecting Receiver and Dish” in Dual Satellite Installation Manual.	Appendix B: “xKu” LNB Activation Instructions



Regardless of your dish size or LNB type, it is important to first read through the Dual Satellite Installation Manual to gain an understanding of the entire process. Please pay special attention to all warnings and other important notes contained in the manual.



Missing Pieces?

The Shaw Direct Self Install Kit contains many additional pieces to help you complete your installation, including:



- Screws to attach the Universal Mount to your structure
- 2x 40 foot lengths and 1x 10 foot length of RG6 coaxial cable
- Dual grounding block and ground wire
- Dual coax wallplate
- Silicone to seal the cable entry holes and dish mount holes
- Hardware to route and secure the coaxial cables, including zip ties and cable clips.

Give us a call at **1.888.554.7827** for more information or to purchase a Self Install Kit.

APPENDIX A: 75 CM E-DISH ASSEMBLY INSTRUCTIONS

Introduction

This document explains how to assemble the Shaw Direct 75 cm elliptical dish. It is designed as a supplement to the complete installation instructions found in the **Dual Satellite Installation Manual** available online or in the **Self Installation Kit**.

Required Tools

In order to assemble the dish, you will need:

- 2x 13mm wrench (one to hold and one to tighten)
- #1 Philips screwdriver

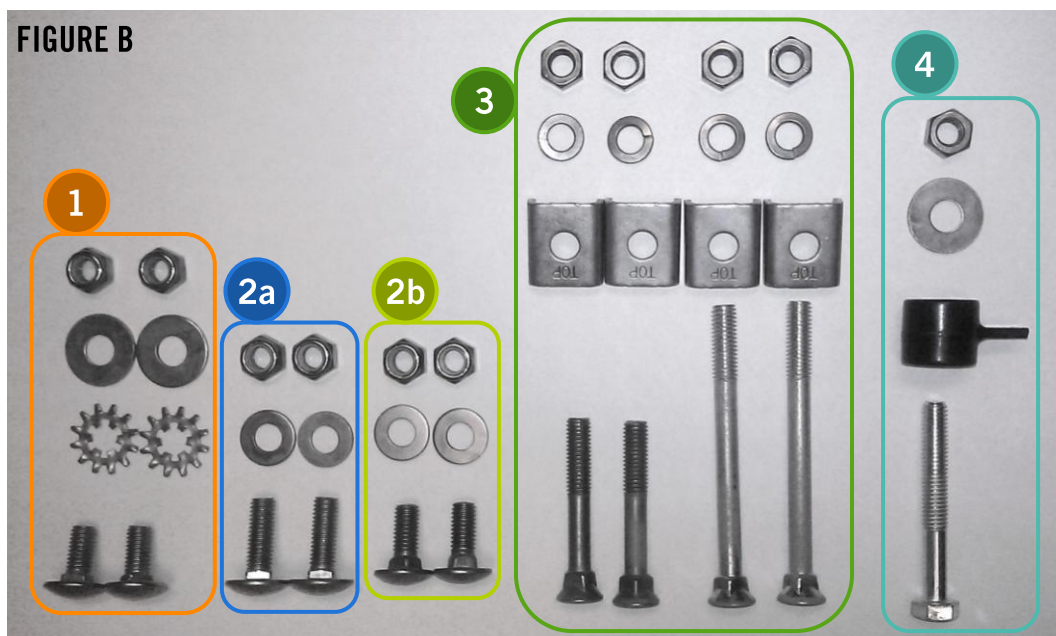
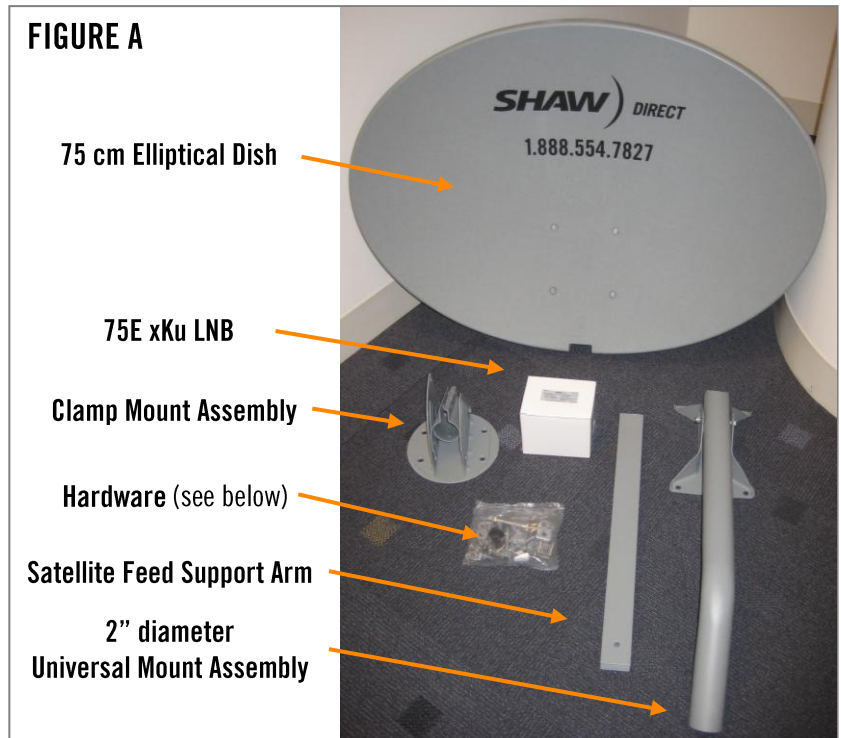
75 cm Dish Kit – What's in the box?

Refer to **FIGURE A** at right for a diagram of all components included with the 75 cm Dish Kit.



75 cm Elliptical Dish Hardware

Lay the hardware out as shown in **FIGURE B** to facilitate assembly. The number corresponds to the steps listed on the following pages.



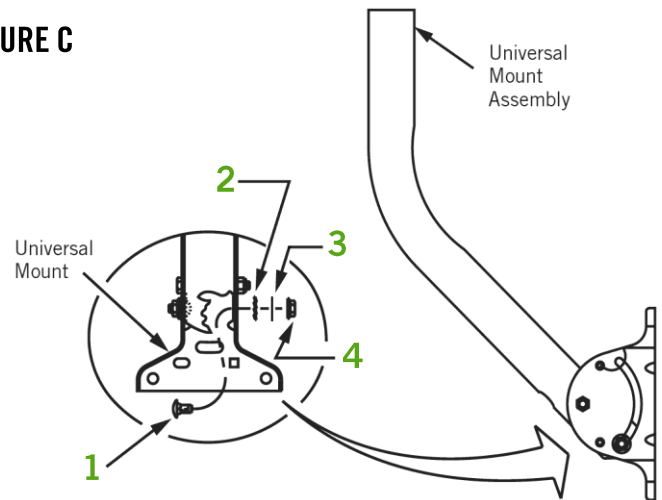
Assembling the Dish

1 Step 1 – Assemble Universal Mount Assembly

NOTE: This step is not required if you will be installing your dish on a tripod.

Insert the smallest Carriage Head bolt (1) as shown in **FIGURE C**, followed by the star washer (2), regular flat washer (3), and lock nut (4). Repeat for the opposite side. Tighten just enough to hold in place.

FIGURE C



Step 2 – Assemble Clamp Mount Assembly (FIGURE D)

2a

a. Azimuth Adjustment

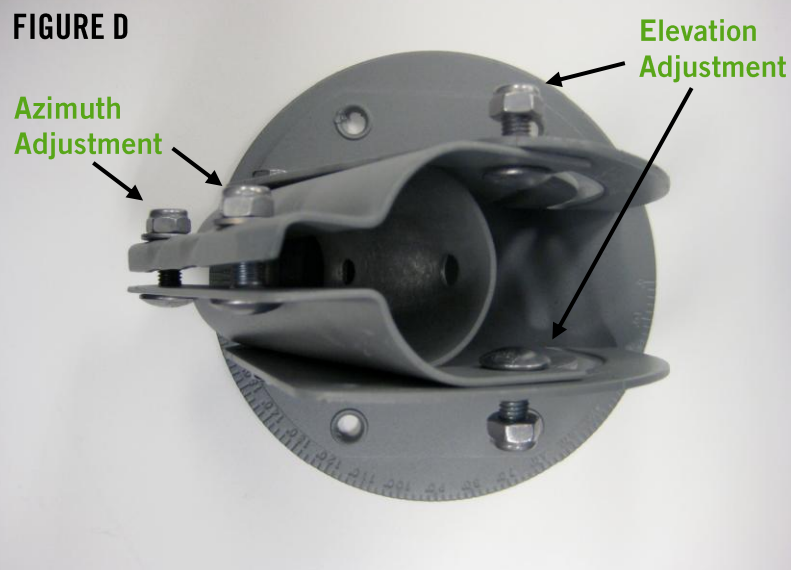
Insert the two largest Carriage Head bolts in the top of the Clamp Mount Assembly. Insert a washer and lock nut on each bolt. Tighten just enough to hold in place.

2b

b. Elevation Adjustment

Insert the remaining Carriage Head bolts in the elevation adjustment area. Insert a washer and lock nut on each bolt. Tighten just enough to hold in place.

FIGURE D



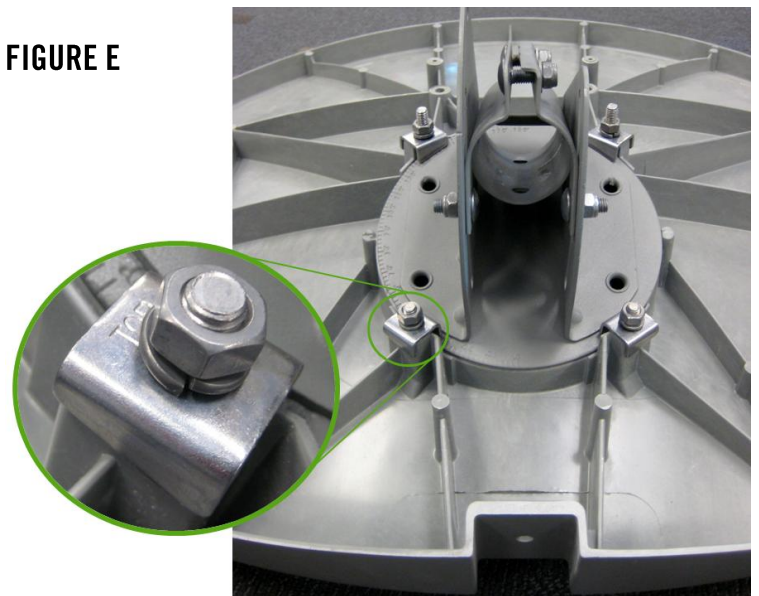
3

Step 3 – Attach the Clamp Mount Assembly to the 75 cm Elliptical Dish (FIGURE E)

Place the completed Clamp Mount Assembly on the back of the 75cm Elliptical dish. Insert the two longer Plow Bolts through the top holes on the front of the dish. Insert the two shorter Plow Bolts through the lower holes on the front of the dish.

Secure each bolt with a skew lock clip, lock washer, and hex nut. Tighten just enough to hold in place – these will be used for **Skew Adjustment**.

FIGURE E



4

Step 4 – Attach the Satellite Feed Support Arm to the 75 cm Elliptical Dish

Attach the Satellite Feed Support Arm to the 75 cm Elliptical Dish using the remaining bolt, plastic spacer, flat washer, and hex nut, as shown in **FIGURE F**. Ensure the slot at the opposite end is on the **underside** of the feed support arm. Tighten fully.

Do not attach the LNB to the Satellite Feed Support Arm just yet. This will be done later.

Next Steps

Your 75 cm Elliptical Dish is now assembled! Please refer to the Shaw Direct **Dual Satellite Installation Manual** for instructions on how to locate the satellite and install the dish, cables, and grounding equipment. This information starts on **page 5**.

Certain information may only pertain to the 60 cm Elliptical Dish and can be ignored.

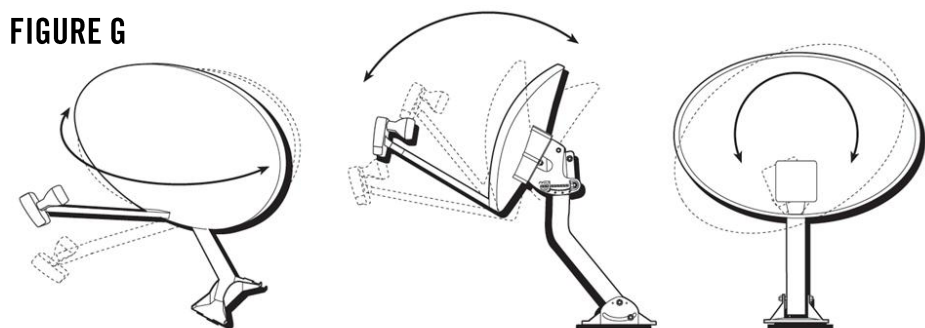
FIGURE F



Aligning the dish

Once installed, you will align the satellite dish by adjusting the azimuth, elevation, and skew as shown in **FIGURE G**. The reference markers for elevation and skew are circled.

FIGURE G

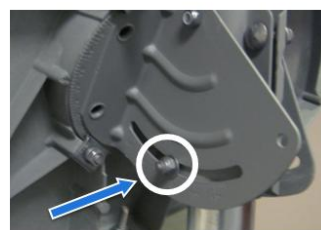


Securing the dish

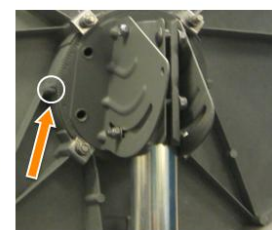
Once the satellite dish is aligned and fully peaked for maximum signal, it is important to ensure that **all** bolts are fully tightened. Any movement of the satellite dish



AZIMUTH



ELEVATION



SKEW

will affect your reception. If your dish is installed on a tripod, you must also ensure the tripod is properly secured to a solid base (such as a patio slab or concrete pad) to prevent movement.

Introduction

This document explains how to connect your satellite receiver to the **xKu LNBF** and which channels to tune to in order to obtain an accurate Signal Strength reading. If you do *not* have an xKu LNBF, you should refer to the instructions found in section 6. Connecting Receiver and Dish” in the **Dual Satellite Installation Manual**.

If you are unsure of which type of LNBF you have, refer to the first page of the **Shaw Direct Self Install Manual Supplement**.

Connecting the Receiver and Dish (xKu LNBF)

You are now at the point in the installation where one of the output ports of the xKu LNBF needs to be connected to the Shaw Direct satellite receiver. Connect the receiver to a TV to see a relative scaled signal level meter that will assist you in obtaining maximum signal strength. If you are unsure of how to connect the TV to the receiver, refer to the User Guide that came with your receiver.

Step 1

Connect the RG-6 coaxial cable provided with the install kit to one of the ports of the xKu LNBF. Connect the other end of the coaxial cable to the satellite receiver input connector. (If you are using an HDPVR 630, you must connect two coaxial cables). To make the dish alignment easier, we suggest you temporarily locate the receiver and TV near an electrical outlet close to where the dish is installed. Unless you can view the signal level on the TV screen from where the dish is being aligned, you will require an assist to monitor the signal level reading on the TV as you align the dish.

Step 2

Depending on your model of satellite receiver, what you do next will vary. Please check the model number listed on the back of your satellite receiver and determine which type you have:

<input type="checkbox"/> A “Single-Look” Satellite Receiver <u>Models:</u> DSR410 DSR411 DSR421	<input type="checkbox"/> B “Legacy” Satellite Receiver <u>Models:</u> DSR205 DSR301 DSR305 DSR315 DSR401 DSR405 DSR451	<input type="checkbox"/> C “00.FE” Satellite Receiver <u>Models:</u> DSR207 DSR209 DSR317 DSR319 DSR505 DSR530	<input type="checkbox"/> D “6XX” Satellite Receiver <u>Models:</u> DSR600 DSR605	<input type="checkbox"/> E “HDPVR 630” Satellite Receiver <u>Models:</u> DSR630
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NOTE: You can ignore any additional letters after the 3 digit model number. For example, if the sticker says “DSR401MN”, you have a DSR401 which is a “Legacy” satellite receiver.

Next, follow the directions applicable to your model of satellite receiver:

A “Single-Look” Satellite Receiver

Please contact Shaw Direct Technical Support for further assistance at **1-888-554-7827**. Your receiver may need to be Factory Reset to proceed with the installation.

B “Legacy” Satellite Receiver

- If your receiver has never been activated or has been provided as a warranty replacement, it will be on channel 255. Tune to channel **252**.
- If your receiver has been activated previously, tune to channel **700**.

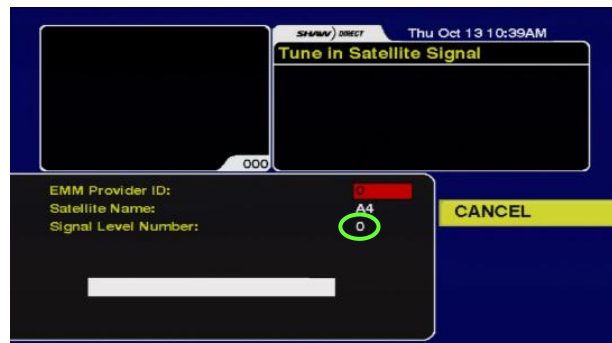
Next, access the **Tune in Satellite Signal** menu by pressing **OPTIONS, 6, 3, 1** and proceed to Step 3.



C “00.FE” Satellite Receiver

- If your receiver has never been activated or has been provided as a warranty replacement, it will be on channel 299. Tune to channel **252**.
- If your receiver has been activated previously, tune to channel **700**.

Next, access the **Tune in Satellite Signal** menu by pressing **OPTIONS, 6, 4, 3, 1** and proceed to Step 3.

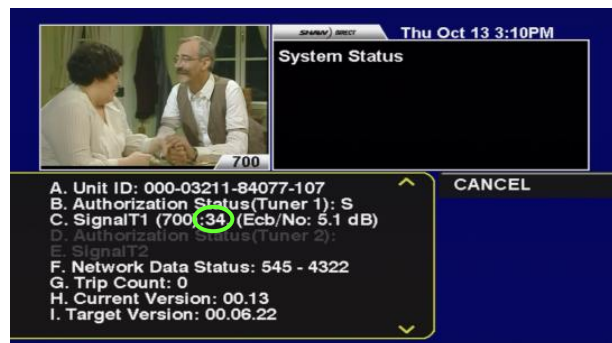


D “6XX” Satellite Receiver

- If your receiver has never been activated or has been provided as a warranty replacement, it will be on channel 299. Tune to channel **252**.
- If your receiver has been activated previously, tune to channel **700**.

Next, access the **System Status** menu by pressing **OPTIONS, 4, 7**. Refer to line “H. Current Version”:

- If your Current Version is 00.13, stay in the **System Status** menu and refer to line “C. SignalT1”. Proceed to Step 3.
- If your Current Version is 04.06, 05.02, 06.22, 07.33, or **higher**, press **EXIT**, and then **OPTIONS, 4, 3, 1** to access the **Tune in Satellite Signal** screen. Proceed to Step 3.



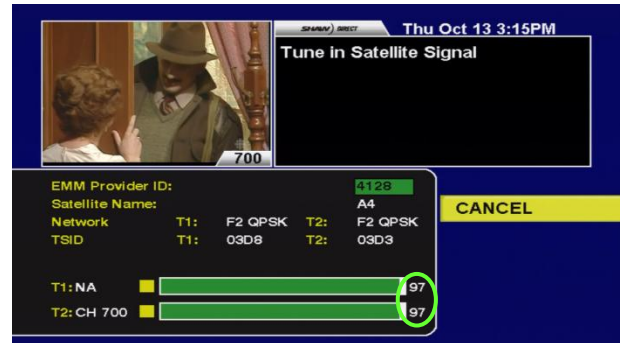
E “HDPVR 630” Satellite Receiver

- If your receiver has never been activated or has been provided as a warranty replacement, it will be on channel 299. Tune to channel **250**, and then **252**.

- If your receiver has been activated previously, tune to channel **711**, and then **700**.

Next, access the **System Status** menu by pressing **OPTIONS, 4, 7**. Refer to line “H. Current Version”:

- If your Current Version is 00.10 or 00.13, stay in the **System Status** menu and refer to line “C. Signal(Tuner 1)” and “E. Signal(Tuner 2)”. Proceed to Step 3.
- If your Current Version is 04.06, 06.22, 07.33 or *higher*, press **EXIT**, and then **OPTIONS, 4, 3, 1** to access the **Tune in Satellite Signal** screen. Proceed to Step 3.



Step 3

You should now be in the “Tune in Satellite Signal” or “System Status” screen. This will display the current signal on a scale of 0 (no signal) to 99 (maximum signal). The objective is to **maximize** the signal, which will typically reach between 80-90 under ideal conditions. It is not necessary to enter an “EMM Provider ID”.

Depending on your satellite receiver and connections to your TV, you may hear an audio beeping that will increase in speed as signal strength increases and will become a monotone once you have reached approximately 50% signal strength. This tone is not available on the HDDSR 600, HDDSR 605, or HDPVR 630 if connected via HDMI.

The signal value which will change as you align the dish is circled in green in the above screenshots.

Using a Satellite Finder

If you have a satellite finder, this can be used instead of relying on the signal level shown on the TV screen. Most satellite finders are installed in-line between the receiver and the LNBF, however some may be self-powered and only require a connection to the LNBF.

The signal finder will provide an audible tone or visual indication of the signal strength as you align the dish.

Refer back to section 7. Aligning Dish to Acquire Shaw Direct Signal” in the **Dual Satellite Installation Manual** to continue the installation.

SHAWDIRECT DIGITAL SATELLITE TV

Dual Satellite Installation Manual



MULTIPLE AWARD-WINNING
24/7/365 SERVICE



SHAW) DIRECT

100% DIGITAL SATELLITE TV

Your simple guide to simple installation.

Your ultimate television experience is here! Simply follow the steps outlined in this manual to install your system and you'll be enjoying amazing 100% digital satellite TV in no time. Before you begin, we'd like to better acquaint you with Shaw Direct.

With over 490 channels and growing, including your favourites in HD, Shaw Direct provides flexible programming options to suit every customer. We also provide 24/7/365 award-winning customer support for any of your questions. Our 100% Canadian service team is happy to help you at one of our three call centres in Calgary, Mississauga and Montreal.

Here are a few of the great things you'll enjoy as a Shaw Direct customer:

TAKE A VACATION FROM YOUR BILL

When you go on holidays so can your bill, with our seasonal disconnect program.

UNIQUE ELLIPTICAL DISH

Get the power of two satellites in one, plus great reception, rain or shine.

EXTENSIVE FREE PREVIEWS

Over 30,000 hours of previews per year so you can sample before you buy.

SIMPLE SATELLITE™ WARRANTY

A lifetime warranty on external equipment.

NO LONG-TERM CONTRACTS

You don't have to worry about a big commitment.

We also offer accessories to enhance your experience, like:

SHAW DIRECT'S WIRELESS EASY JACK

Turn any electrical outlet into a phone jack, and connect your receiver to order Pay Per View movies and events, right from your remote!

Here's why it's handy:

- Caller ID/Call Waiting compatible
- Built-in surge protection
- Eliminates the cost and challenge of hard-wiring a new phone jack
- Also works with other devices such as computers, phones and faxes



If you want to hear about customer offers and promotions, sign-up for our free email news at SHAWDIRECT.CA/SCOOP. And tune into channel 299 where you'll also find technical tips and movie and sports highlights.

Welcome to the Shaw Direct family!



1. GETTING STARTED

This Shaw Direct Installation Manual provides all of the information required to setup your satellite system. The manual provides step-by-step instructions, however skills in construction, wiring and assembly will also be required to successfully complete the installation.

IMPORTANT: We do not recommend installing the satellite dish on your roof, unless absolutely necessary. If you choose to mount the dish on the roof, we strongly recommend consulting a building or construction expert before installation.

IMPORTANT: Read this manual thoroughly before you start.

WARNING: All satellite dish systems must be properly grounded, particularly if the dish is close to or above the roof line. Improper grounding can result in damage or serious personal injury. National, provincial and local electrical codes may require you to ground the dish directly and to insert a grounding block in the coaxial cables running from the dish to the receiver inside the building. Before beginning installation, carefully read the section on grounding the dish (see section 10).

This installation requires you to:

- Use hand tools such as a drill
- Determine whether water pipes, electrical wiring or gas lines are close to the installation area
- Route coaxial cable through walls and under floors
- Use a compass, protractor and carpenter's level
- Use a ladder to climb structures
- Know your local, provincial and national grounding codes

If you do not have the experience to perform these tasks, contact **SHAW DIRECT** for assistance.

You will need the following tools:

- #1 Philips screwdriver
- 7/16 hex wrench, open or combination end
- Electric drill and bits
- Carpenter's level
- Compass
- Protractor

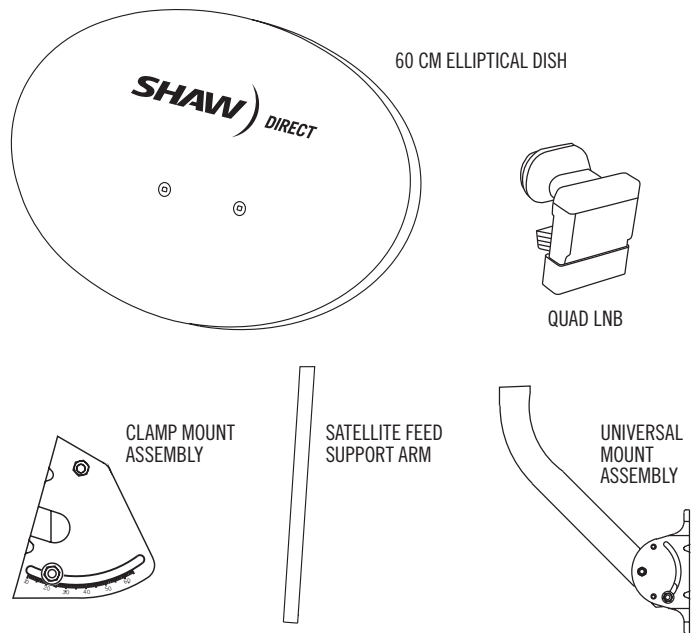
If you are installing a 75 cm dish, you will also require:

- 2 - 13 mm wrenches (one to hold and one to tighten)
- A wind brace support is recommended for high wind areas

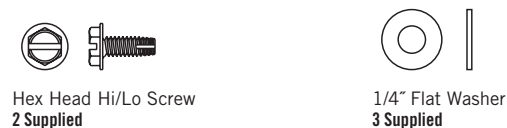
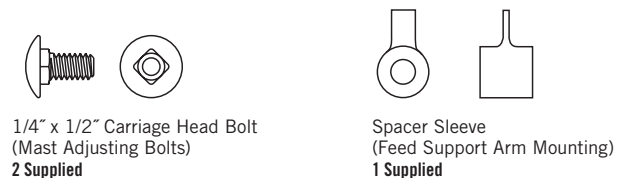
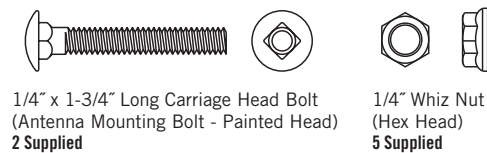
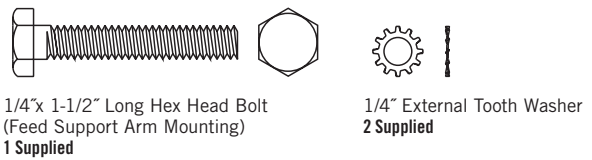
NOTE: You must use the mast that came with the dish.

Your Shaw Direct Dish Kit contains the following components:

- Shaw Direct 60 cm Elliptical Dish with dual satellite hardware (see images for complete inventory).



HARDWARE



Key points to remember when installing your Shaw Direct System:

- Do not drill any holes until you've confirmed the best location for the dish.
- Make sure the installation of the dish conforms to local electrical and building codes, zoning requirements and other applicable laws and regulations. If you are unsure, contact a local electrician or building inspector for assistance.
- For possible periodic removal of snow, choose a site that is easily accessible.
- Ensure there are no visible obstructions between the dish and your line of sight to the satellites. Keep in mind that trees will grow up and outward and may eventually block the signal.
- The maximum allowable length for the RG-6 coaxial cable connecting the receiver to your dish is 125 feet. Consult Shaw Direct if the cable will exceed this length.
- Use only RG-6 grade coaxial cable. Using lower grade RG-59 coaxial cable may result in excessive signal loss and poor reception. Cable grade type is indicated on the outer jacket of the cable.

Do not install the dish:

- Under power lines
- Where it may be easily tampered with
- Where it is exposed to high winds, during windy or stormy conditions

2. MOUNTING LOCATIONS

Your dish will typically be mounted on a solid base. To ensure your dish doesn't move in windy conditions, choose a location where it can be securely fastened. The mounting surface should be rigid and solid.

IMPORTANT: The Elliptical Dish has a turn radius of +/- 35 degrees. If you are mounting the dish on the side of your house, check the assembled dish and mounting pole to see if you can rotate the dish in the desired azimuth setting. If you can't rotate the dish, choose an alternate location.

Key things to remember when choosing a mounting location:

- The mounting surface should be flat, even and in good condition.
- If you install the dish on the roof or side of your house, be sure to attach the bolts into a building stud, rafter or other solid surface.
- When mounting on the roof of your house, use an adequate/approved sealant (for your type of roofing material) around the holes where the base of the universal mount meets the mounting surface. This will prevent the roof from leaking. Consult with a roofing expert to confirm best sealant.

We do not recommend:

- Mounting the dish on a railing
- Installing the dish on aluminum or vinyl siding (these are unlikely to be structurally sound)

Keep grounding requirements in mind (see section 10 for additional information on grounding).

NOTE: We do not recommend mounting the dish on the roof unless absolutely necessary. We also recommend that you consult a building expert for future tips on preventing roof leakage.

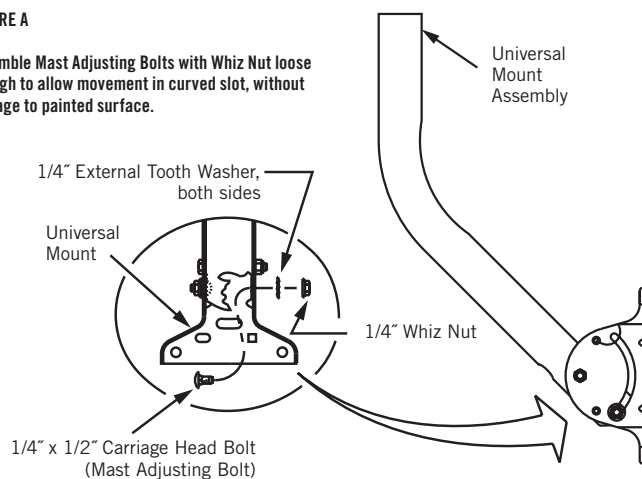
3. DISH ASSEMBLY

STEP 1: To avoid losing any hardware components, select a clear area for dish assembly.

Step 2: On the Universal Mount, insert the (2) 1/4" X 1/2" Carriage Head Bolts (Mast Adjusting Bolts), through the mast and the curved slot of the mount. Capture with (2) 1/4" External Tooth Washers and (2) 1/4" Whiz Nuts. Tighten the bolts just enough to hold in place (see Figure A).

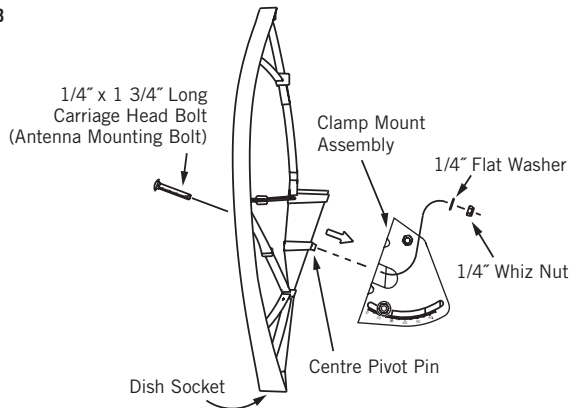
FIGURE A

Assemble Mast Adjusting Bolts with Whiz Nut loose enough to allow movement in curved slot, without damage to painted surface.



Step 3: Attach the dish to the Clamp Mount Assembly using the (2) 1/4" X 1-3/4" Long Carriage Head Bolts (Antenna Mounting Bolts-Painted Head), (2) 1/4 Flat Washers and (2) 1/4" Whiz Nuts. Ensure the Center Pivot Pin on the Clamp Mount Assembly is inserted in the mating hole of the Dish (see Figure B).

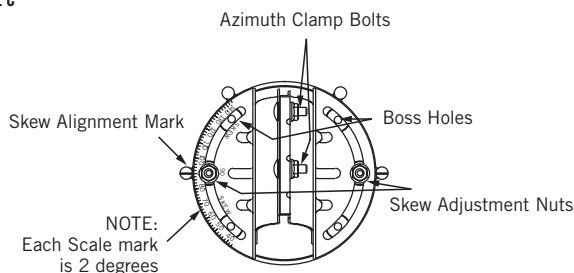
FIGURE B



STEP 4: Before tightening the bolts, adjust the skew alignment to the 90 degree mark on the Clamp Mount Assembly (see Figure C). Tighten the bolts just enough to hold in place. You'll have to make further adjustments to this setting later.

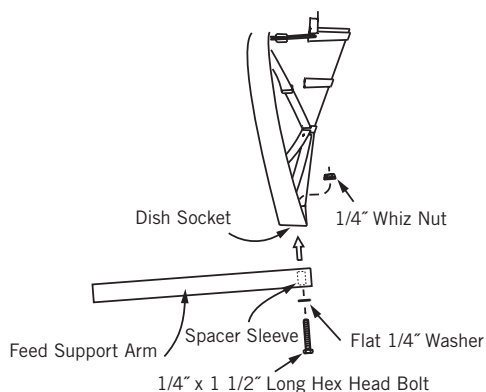
TIP: Initially setting the skew to 90 degrees will make it easier to aim the dish.

FIGURE C



STEP 5: Attach the Feed Support Arm to the dish using the (1) 1/4" X 1-1/2" Hex Head Bolt (1), Spacer Sleeve, (1) 1/4" Flat Washer and (1) 1/4" Whiz Nut, making sure the Feed Support Arm and Spacer Sleeve are positioned as shown (See Figure D). Position the 2 plastic cable clips (packaged with the LNB) around the support arm to secure the coax cable(s) from the LNB to receiver.

FIGURE D



YOU'VE JUST FINISHED ASSEMBLING THE DISH.

4. LOCATING THE SATELLITE

STEP 1: Determine the direction in which to point the dish.

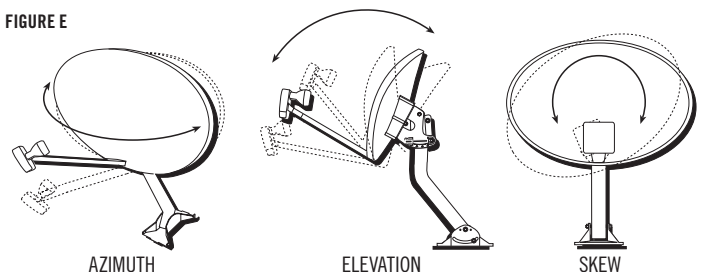
The primary satellite (SAT A) is located at 107.3 west longitude; the secondary satellite (SAT B) will be located at 111.1 west longitude.

IMPORTANT: For dual satellite (elliptical) dish installation, use the SAT B Azimuth, Elevation and Skew listings in the Dual Satellite Locator Chart at the back of this manual for the city nearest your location.

WRITE THEM HERE:

Azimuth	Elevation	Skew
SAT A: _____	SAT A: _____	SAT A: _____
SAT B: _____	SAT B: _____	SAT B: _____

FIGURE E



STEP 2: Use a compass to determine roughly where to point your dish.

STEP 3: Choose a dish installation location with a clear line of sight to both SAT B and SAT A based on the settings you recorded earlier. There should be no trees, buildings or other obstructions between the dish and the satellite. Do you have a clear line of sight to both SAT A and SAT B?

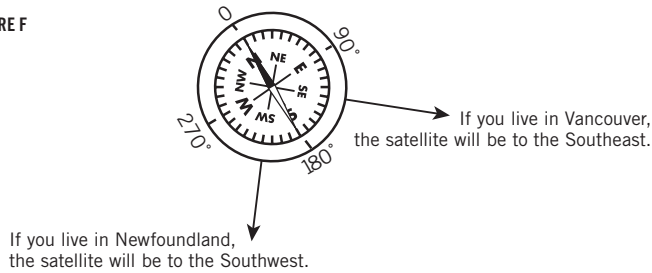
- If YES, go to Step 4 and continue with the installation.
- If NO, find another location.
- If you're not sure, contact Shaw Direct for more information.

NOTE: To ensure an accurate compass reading, stay away from large metal objects. To double-check accuracy, take multiple readings several feet apart.

STEP 4: At the dish install site, hold a compass level and still in the palm of your hand. When the needle stops rotating (dark half of the needle always points north), slowly rotate the body of the compass so that the "N" marking is aligned with the dark half of the needle. Locate the tick mark on the compass edge corresponding to the SAT B azimuth number you wrote down earlier (see Figure F). This is the direction in which to point your dish to receive both SAT A and SAT B signals.

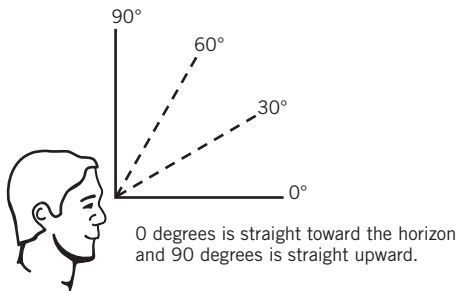
TIP: Use a stick or other object to mark the correct azimuth direction.

FIGURE F



STEP 5: Estimate the SAT B elevation (angle) setting you recorded earlier, using a protractor if needed (see Figure G). Check any obstructions at that elevation. If there are obstructions, then select an alternate location for the dish.

FIGURE G



IMPORTANT: When evaluating the install location, make sure there are no trees, branches or objects visually obstructing the dish and the general direction of the satellite. Also, keep in mind that trees grow up and outward and may eventually block the signal.

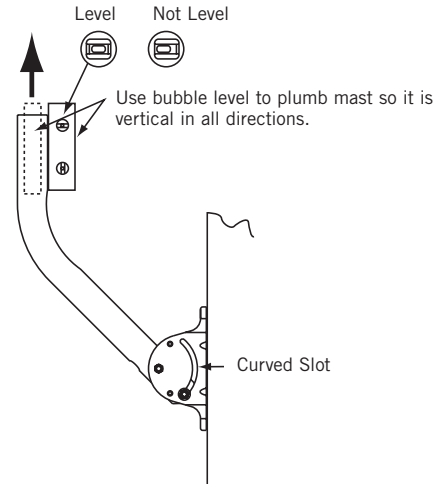
YOU HAVE JUST COMPLETED LOCATING A SITE FOR YOUR DISH.

5. ATTACHING THE DISH

STEP 1: Ensure mast is plumb before drilling any holes. Hold the Universal Mount in place on the mounting area. Use a carpenter's level to plumb the antenna mast's straight section. If the bubble levels (horizontal and vertical) are not centered, rotate the mast (in the curved slot) until it is plumb. Lock it in place by securely tightening the Mast Adjusting Bolts (see Figure H).

IMPORTANT: Alignment of the dish will be difficult if the mast is not plumb.

FIGURE H



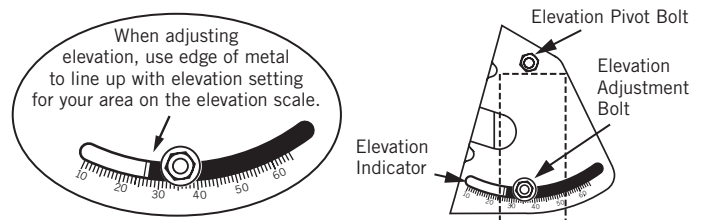
STEP 2: Drill holes in the structure on which you are mounting the dish to match the holes in the base of the Universal Mount.

STEP 3: Secure the Universal Mount with appropriate surface screws. Check the mount for movement. An improperly secured mount will affect dish performance.

STEP 4: Slide the Dish/Clamp Mount Assembly onto the mast by loosening the (2) Azimuth Clamp Bolts (see Figure C) and the Elevation Pivot Bolt just enough to slide the assembly until it makes contact with the Elevation Pivot Bolt (see Figure I). Tighten the Elevation Pivot Bolt just enough to hold it in place on the mast.

FIGURE I

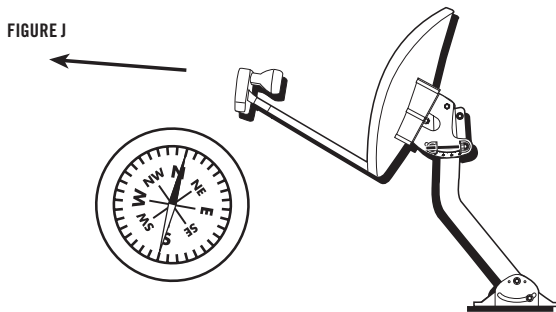
Use the metal edge, not the nut or L-bracket to set elevation.
(For example, in this picture, the elevation is set at 26).



STEP 5: Loosen the Elevation Adjustment Bolt 1/3 turn from tight on either side of the Clamp Mount Assembly. Adjust the Clamp Mount Assembly to the edge of the white indicator line per the SAT B elevation setting you recorded earlier. Tighten the Elevation Adjustment Bolt (see Figure I).

STEP 6: Attach the Quad Satellite LNB/Feedhorn Clamp Assembly to the Feed Support Arm. Loosen the Feed Arm screw enough to allow the clamp to fit snugly into the Feed Support Arm. Securely tighten the Feed Arm screw.

STEP 7: Using your compass, point the LNB in the direction corresponding to the SAT B azimuth setting (see Figure J). Draw a vertical mark overlapping the Clamp Mount Assembly and the mast. This mark will provide you with the approximate satellite location reference point when you are ready to tune to the satellite.



STEP 8: Loosen the Skew Adjustment Bolts on either side of the Clamp Mount Assembly. Adjust the Skew Alignment Mark with the scale indicator to the SAT B skew setting you recorded earlier. Finally, lock it in place by securely tightening the Skew Adjustment Bolts.

IMPORTANT: Do not make any further adjustments to the Skew Setting from this point onward.

STEP 9: After making the permanent skew adjustment, install the (2) Hex Head Hi/Lo Screws in the dish boss holes (see Figure C). Four boss holes are available but you'll only need to use two (the other two may be obstructed depending on the skew setting). Do not over tighten Hi/Lo Screws.

YOU HAVE JUST FINISHED ATTACHING THE DISH TO THE UNIVERSAL MOUNT.

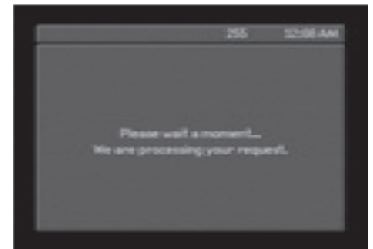
6. CONNECTING RECEIVER AND DISH

You are now at the point in the installation where one of the output ports of the QUAD LNB needs to be connected to the Shaw Direct satellite receiver. Connect the receiver to a TV to see a relative scaled signal level meter that will assist you in obtaining maximum signal strength. If you are unsure of how to connect the TV to the receiver, refer to the User Guide that came with your receiver.

STEP 1: Connect the RG-6 coaxial cable provided with the install kit to one of the ports of the QUAD LNB. Connect the other end of the coaxial cable to the satellite receiver input connector. To make the dish alignment easier, we suggest you temporarily locate the receiver and TV at an electrical outlet close to where the dish is installed. Unless you can view the signal level on the TV screen from where the dish is being aligned, you will require an assistant to monitor the signal level reading on the TV as you align the dish.

STEP 2: When the receiver is first powered up, it should be tuned to channel 299. If you are using a legacy receiver and cannot tune to channel 299, go to channel 284 instead.

If you are working with an non-activated legacy receiver, you should see the following displayed on the TV when you first turn the receiver on. Using the remote, tune receiver to channel 284 to align the dish. If the receiver has been activated before, tune to channel 299 (not 284).



Non-activated legacy receivers.

For new or non-activated Advanced receivers, you should see the following displayed on your TV when you first turn the receiver on. Tune to channel 299 if the receiver is not already there.

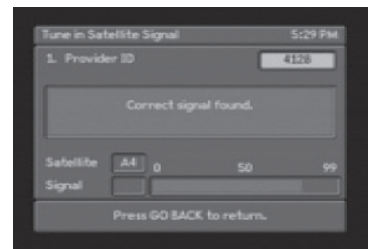


Advanced receivers.

STEP 3: Access the Installation Settings menu. To access this menu on legacy model receivers:

1. Using the remote, press Options
2. Press 6: System Setup
3. Press 3: Installation settings
4. Press 1: Tune in Satellite Signal

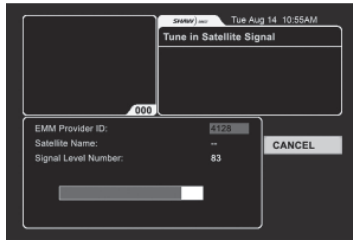
Position the yellow cursor on the Provider ID (using navigator keys on the remote control) and enter 4128 on the keypad.



Installer Menu for legacy model receivers.

To access this menu for on Advanced model receivers:

1. Using the remote, press Options
2. Press 6: System Setup (if available)
3. Press 4: System Settings
4. Press 3: Installation Settings
5. Press 1: Tune in Satellite Signal



Installer menu for Advanced receivers.

Position the yellow cursor on EMM Provider ID (using navigator keys on the remote control) and enter 4128 on the keypad. Use the above illustrated installer menu to align the dish for maximum signal strength. You should have the assistance of a second person to monitor the TV while you complete the adjustments to the satellite dish. As you align the dish for optimum signal strength, the signal level bar will increase in length from left to right and will change colour from red (no signal) to yellow (marginal signal) to green (good signal). Continue to align the dish until you achieve maximum strength. Under clear sky conditions and depending on your location, you should be able to achieve a signal strength of between 80 and 90%. In addition to the visual signal strength indicator, the receiver also emits an audio beeping that will increase in speed as signal strength increases and will become a monotone once you have aligned the dish to the satellite and achieved approximately 50% signal strength. When audio beep becomes monotone, the front panel LED should change from Red to Green, indicating signal lock on the satellite.

7. ALIGNING DISH TO ACQUIRE SHAW DIRECT SIGNAL

With the receiver on and your assistant ready to monitor signal strength on the TV, you are now ready to make adjustments to the dish to acquire the Shaw Direct satellite signal.

STEP 1: Refer to the azimuth, elevation and skew settings for the location that you recorded on Page 5.

STEP 2: For initial alignment, set the skew to 90 degrees. Skew will be readjusted to your specific location setting once you acquire the Shaw Direct satellite signal.

TIP: It is easier to locate satellite signal with skew set to 90 degrees.

STEP 3: Check that the dish elevation is set to the elevation setting listed for your area.

STEP 4: Draw a reference mark on the dish clamp and pipe mast as a starting point before you make any adjustments to the dish.

STEP 5: Standing behind the dish, using both hands, grasp the dish on each side and slowly move the dish in very small increments to the east or west (several degrees) while your assistant observes the TV installation menu for increases in signal strength.

STEP 6: As you start to get an indication of increasing signal, make a second reference mark on the dish clamp and pipe mast to serve as a point where signal strength increased.



STEP 7: As you move dish past the point of maximum signal strength, move dish back in the opposite direction until you achieve maximum signal.

STEP 8: Tighten the dish clamp screws.

STEP 9: Now make small adjustments to the elevation of the dish to see if you can further improve on the signal strength. Loosen the Elevation Adjustment Bolts and make slight adjustments (1/2 degree increments) in the elevation, finding the maximum signal strength. When you've located the maximum signal strength possible, securely tighten all bolts.

STEP 10: As a last step, adjust the skew of the dish according to the skew setting you recorded for the location where you are installing the dish. Again, make small adjustments as your assistant monitors the signal strength. When you have reached maximum signal strength tighten the screw to lock down the skew setting.

NOTE: Do not be discouraged if you do not acquire signal on your first attempt. Be patient and try again. Recheck the pipe mast for true vertical 90 degrees. Once you acquire signal, you may need to make very small adjustments to the dish compass heading (azimuth), elevation and skew settings to maximize signal strength to between 80 and 90%.

SIGNAL VERIFICATION

The front panel of the satellite receiver will indicate if the correct Shaw Direct signal is being received. On the receiver, observe the LED signal status indicator light. Once this light is no longer red, it indicates the receiver is tuned to a valid channel and has acquired the Shaw Direct signal.

You are ready to proceed to the next step.

If this LED light is RED it indicates NO SIGNAL is being received by the receiver. The dish is not properly aligned to receive the Shaw Direct satellite signal.

AUTHORIZING RECEIVER FOR SERVICE

If your receiver installer menu displays signal strength of between 80 and 90%, you have successfully aligned the dish to the Shaw Direct satellite.

Congratulations, you are now ready to authorize your receiver for programming. Record the receiver serial number (SN) and receiver unit address (UA) from the bar code label on the back panel of the receiver or from the bar code label that is applied to the receiver's shipping carton. Record these numbers below for future reference.

SN (16 digits) _____
UA, 0 0 0 - 0 _____ - _____ - _____

8. FINE TUNING

STEP 1: Call Shaw Direct at 1.888.554.7827 to authorize your receiver for programming.

Shaw Direct will ensure the correct channel map is set for your receiver and verify the reception of both satellites. After your receiver has been activated, you can fine tune the dish to ensure maximum signal strength on all channels.

While speaking with the Shaw Direct representative, ask for a reference channel from each satellite to use when fine tuning the dish.

STEP 2: Tune to the first reference channel provided and access the Installation Settings menu as described in Section 6.

FINE TUNING THE AZIMUTH:

STEP 3: With your assistant monitoring the signal level, move the dish back and forth slightly (about a millimeter at a time) to attempt to acquire the highest reading possible on the signal strength meter.

STEP 4: Once you have found the maximum signal strength, lock the azimuth rotation position in place by tightening the Azimuth Clamp Bolts (see Figure C).

NOTE: Fine tuning to a high signal strength reduces signal interference in adverse weather conditions and ensures optimal reception from both satellites. Although the signal level bar goes to a maximum of 99, you will not reach this level.

FINE TUNING THE ELEVATION:

STEP 5: Loosen the Elevation Adjustment Bolts and make slight adjustments (1/2 degree increments) in the elevation, finding the maximum signal strength, as you did in the azimuth tuning process.

STEP 6: Exit the Installation Settings menu and tune to the second reference channel provided. Go back into the Installation Settings menu and repeat steps 3-5 to maximize signal strength from the second satellite.

STEP 7: When you've located the highest signal possible on both channels, securely tighten ALL bolts

YOU HAVE JUST COMPLETED FINE TUNING. Skip ahead to section 10.

9. ALTERNATE TUNING METHOD

FIGURE K



You may prefer to locate the satellites using a SF-100 Satellite Finder (see Figure K), a standalone satellite signal finding meter which can be purchased separately from Shaw Direct or your Shaw Direct retailer.

STEP 1: Connect a short coaxial cable from the LNB terminal on the Satellite Finder to the Quad LNB. Connect the receiver terminal on the meter to a coaxial cable, which in turn connects to the SAT IN port on the Shaw Direct receiver.

STEP 2: Tune to channel 299 (Advanced receivers). If you have a non-activated legacy receiver, tune to channel 284.

NOTE: For satellite finder and LNB to function, they must be connected to a satellite receiver, plugged in and turned on.

STEP 3: Adjust the dish as closely as possible to the elevation and azimuth settings you recorded earlier.

STEP 4: Move the dish azimuth rotation very slightly to the right of the reference mark you drew on page 5.

STEP 5: Slowly rotate the dish back toward the reference mark and listen for pitch changes in the audible tone. If your elevation is set correctly, you should hear two major pitch changes as it picks up the satellite signals. A weak first change of pitch may be the wrong satellite. Continue rotating the dish until the second major deflection, which will be SAT A (107.3), your intended target.

STEP 6: When you have located both signals, move the dish slightly to the right and left of the mark until you've maximized the signal. Then tighten the Azimuth Clamp Bolts. Verify you've located the correct satellite (see Signal Verification on page 8).

STEP 7: While listening to the meter, apply gentle pressure to the top of the dish to move the dish – first slightly downward, then upward to see if you can increase the signal strength further. Carefully adjust the elevation until you've maximized the signal. Tighten the Elevation Adjustment Bolts.

STEP 8: Follow the steps described in Fine Tuning (Section 8) to obtain the highest reading possible on the signal strength meter.

STEP 9: The dish should now be peaked to its maximum. Remove the Satellite Finder and plug the LNB directly into the receiver. Confirm the signal strength by checking the on-screen signal strength meter, as described in the previous section.

YOUR SYSTEM IS NOW FINE TUNED.

10. GROUNDING THE COAXIAL CABLE

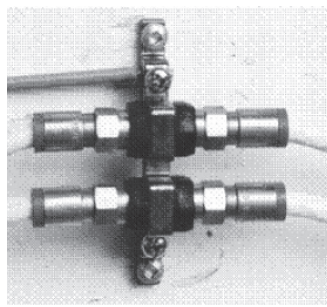
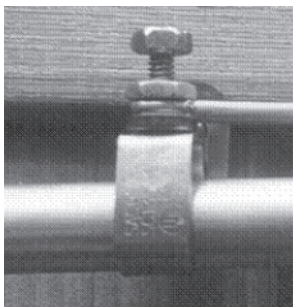
The Shaw Direct dish kit includes the following items to ground the outdoor coaxial cable:

- Coax Cable Connector Grounding Block
- Grounding Wire
- Grounding Clamp

Outdoor coaxial cable that may be subject to static discharge or contact with electrical wiring must be grounded through a grounding block located as close as possible to the cable entry point (see Figure L).

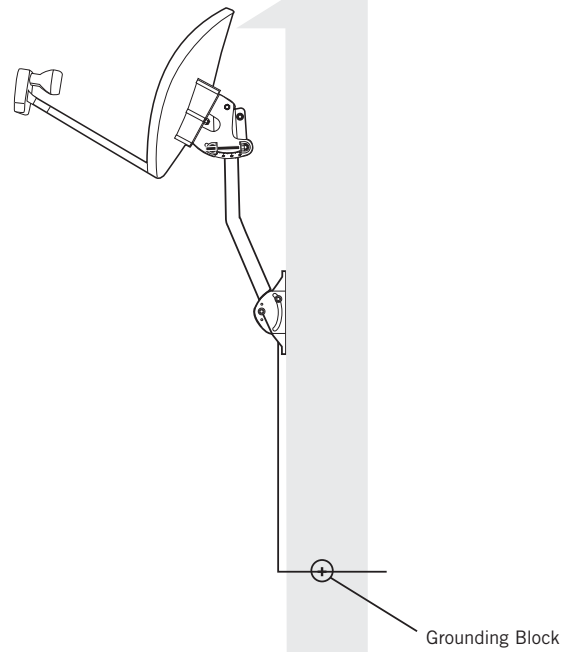
- Run the Grounding Wire for the coaxial cable from the Grounding Block connector to a cold water pipe nearest the cable entry point.
- Wrap the copper grounding strap around the cold water pipe. Tighten the strap using a bolt and secure the ground wire under the binding post nut, as illustrated below.

IMPORTANT: For more information on grounding, refer to the receiver's User Guide included with your Shaw Direct system.



Ground block (shown with 2 coax cable feeds and ground wire secured to binding post)

FIGURE L



11. TROUBLESHOOTING

IF YOU ARE HAVING TROUBLE FINDING THE SATELLITE SIGNAL, TRY EACH OF THE FOLLOWING:

- The cable can be plugged into any of the 4 available ports on the quad LNB, but must be plugged into the SAT IN port on the Shaw Direct receiver.
- Make sure all cables are secure and re-verify your azimuth, elevation and skew setting for your location. The settings straight section must be plumb.
- Adjust the elevation by +1 degree from the settings you recorder earlier and repeat the steps in Section 7 to acquire Shaw Direct signal.
- Adjust the elevation by –1 degree from your original settings you recorded earlier and repeat the steps in Section 7 to acquire Shaw Direct signal.
- Ensure cables are connected properly at the grounding block.

IF YOU CANNOT CHANGE CHANNELS, TRY THE FOLLOWING:

- Unplug the receiver, wait 30 seconds and plug it back in. Turn on the receiver and try selecting channel 299 with your remote (Advanced receivers). If you have a legacy receiver and cannot access channel 299, try 284.

If you still can't select or acquire signal on 284 or 299, call us at 1.888.554.7827 for further assistance.

SATELLITE LOCATOR CHART

Satellite Look Angles are listed for both Satellite A (107.3W longitude) and Satellite B (111.1W longitude). The reception of satellite signals in areas with a dish elevation less than 12 degrees may not be possible. Consult with a Shaw Direct retailer in your area. All information is listed in degrees.

NOTE: Please refer to the SATELLITE B settings if you have an elliptical dish. SATELLITE A should only be used for a round dish.

SATELLITE A				SATELLITE B			SATELLITE A				SATELLITE B		
Town/City	Compass Azimuth	Dish Elevation	Dish Skew	Compass Azimuth	Dish Elevation	Dish Skew	Town/City	Compass Azimuth	Dish Elevation	Dish Skew	Compass Azimuth	Dish Elevation	Dish Skew
NEWFOUNDLAND							Asbestos	242	26.9	120	246	24.9	122
Bonavista	264	14.4	126	267	12.1	127	Baie Comeau	248	22.4	119	251	20.4	121
Cartwright	262	13.8	120	265	11.9	121	Baie St.Paul	244	24.9	119	248	22.9	121
Corner Brook	260	17	124	263	14.8	125	Asbestos	242	26.9	120	246	24.9	122
Gander	263	15	125	266	12.8	126	Beattyville	232	26.9	114	237	25.2	116
Grand Falls	262	15.7	125	265	13.5	126	Cap-de- la-Madeleine	241	26.8	119	245	24.7	121
Hebron	259	13.6	114	262	12	115	Charlesbourg	243	25.7	119	247	23.7	121
Indian Harbour	262	13.6	119	265	11.7	120	Chibougamau	238	24.9	115	242	23.1	117
Labrador City	251	19.1	116	254	17.3	118	Chicoutimi	243	24.4	118	247	22.5	120
Nain	258	14.4	116	262	12.7	117	Cowansville	240	27.8	120	244	25.7	122
North West River	259	15.5	119	262	13.6	120	Dolbeau	241	24.7	117	245	22.8	119
Nutak	259	13.8	115	262	12.2	116	Donncona	242	26.1	119	246	24.1	121
Placentia	263	15.5	127	266	13.2	128	Dosquet	242	26.2	119	246	24.1	121
Port aux Basques	258	18.5	125	262	16.2	126	Drummondville	241	27.1	119	245	25.1	121
Rigolet	261	14.3	119	264	12.4	120	Eastmain	231	24.5	111	235	23	113
Schefferville	251	17.8	115	255	16.1	116	Festubert	240	26.2	118	244	24.2	120
St. Anthony	262	14.4	122	266	12.3	124	Fort Coulonge	233	29.3	117	237	27.4	119
St. John's	264	14.6	127	267	12.3	128	Gagnon	248	20.4	117	252	18.6	118
Trepassey	263	15.4	128	267	13.1	129	Gaspe	253	20.7	121	256	18.6	123
Wabush City	251	19	116	254	17.2	118	Gatineau	235	29.1	118	239	27.1	120
NOVA SCOTIA							Granby	240	27.6	120	244	25.6	122
Bridgewater	252	23.7	125	256	21.3	127	Grand Mere	241	25.1	117	245	23.2	119
Cape Breton Is.	256	20.5	125	260	18.2	127	Hauterive	248	22.5	119	251	20.5	121
Chesterfield In.	208	17.5	98	212	16.9	100	Hull	235	29.1	118	239	27.2	120
Dartmouth	254	22.9	125	257	20.6	127	Inukjuak	235	19	107	239	17.8	109
Freeport	250	24.8	124	254	22.5	126	Ivujivik	240	15.4	105	244	14.4	106
Mulgrave	256	21	125	259	18.6	127	Joliette	239	27.5	119	243	25.5	121
Port Hawkesbury	256	21	125	260	18.6	127	Kuujuaq	252	15.8	112	256	14.4	113
Port Maitland	250	24.9	125	254	22.5	127	Kuujuarapik	234	21.5	109	238	20.1	111
Sable Is.	258	21.1	128	261	18.6	129	La Sarre	228	27.8	113	233	26.2	115
Shelburne	251	24.6	125	255	22.2	127	La Tuque	240	26.1	118	244	24.1	120
Sydney	257	19.9	125	261	17.6	127	Levis	243	25.7	119	247	23.7	121
Truro	254	22.3	125	257	20	126	Madeleine	256	20.1	124	259	17.8	125
Wedgeport	250	25	125	254	22.6	127	Malartic	230	28	114	235	26.2	116
Yarmouth	250	25	125	254	22.7	127	Maniwaki	235	28.5	117	239	26.6	119
PRINCE EDWARD ISLAND							Matagami	232	26.5	113	236	24.8	115
Charlottetown	254	21.7	124	258	19.4	126	Matane	249	22.3	120	252	20.3	121
NEW BRUNSWICK							Mingan	253	19.5	120	257	17.5	122
Bath	248	24	122	252	21.9	123	Miquelon	234	26.2	114	238	24.5	116
Bathurst	251	22.2	122	255	20.1	123	Mistassini	241	24.6	117	245	22.8	119
Chatham	251	22.5	122	255	20.3	124	Monet	235	26.8	115	239	25	118
Dalhousie	250	22.3	121	254	20.2	123	Mont Laurier	235	28.1	117	239	26.2	119
Edmundston	247	23.8	120	251	21.7	122	Mont Louis	251	21.1	120	255	19.1	122
Fredericton	250	23.9	123	253	21.7	124	Montmagny	244	25.3	120	248	23.2	122
Grand Manan Is.	249	24.9	124	253	22.6	126	Montreal	239	28	119	243	26	121
Hartland	248	24.1	122	252	22	124	Mont Joli	247	22.9	119	251	20.9	121
Kedgwick	249	23.1	121	252	21	123	Natashquan	256	18.4	121	260	16.3	123
Moncton	252	22.7	123	256	20.5	125	Noranda	229	28.2	113	233	26.5	116
Napadogan	249	23.8	122	253	21.6	124	Parent	237	26.6	116	241	24.7	119
Newcastle	251	22.6	122	255	20.4	124	Paspebiac	251	21.7	121	255	19.6	123
Oromocto	250	23.9	123	253	21.6	125	Pointe aux Anglais	249	21.6	119	253	19.6	121
Plaster Rock	249	23.6	121	252	21.5	123	Pointe-aux-Tremble	239	27.8	119	243	25.8	121
St. John	250	24	123	254	21.7	125	Port Cartier	250	21.2	119	253	19.2	121
QUEBEC							Quaqtaq	253	14.1	109	256	12.8	110
Alma	242	24.7	118	246	22.7	120	Quebec	243	25.8	119	247	23.7	121
Amos	231	27.6	114	235	25.9	116	Rimouski	247	23.1	119	251	21.1	121
Anticosti	254	19.6	121	258	17.5	123	Riviere-du-Loup	245	24.1	119	249	22.1	121
							RivierePentecote	249	21.5	119	253	19.5	121
							Roberval	241	25	117	245	23.1	119

Town/City	SATELLITE A			SATELLITE B			Town/City	SATELLITE A			SATELLITE B		
	Compass Azimuth	Dish Elevation	Dish Skew	Compass Azimuth	Dish Elevation	Dish Skew		Compass Azimuth	Dish Elevation	Dish Skew	Compass Azimuth	Dish Elevation	Dish Skew
Rouyn	229	28.2	113	233	26.5	116	Gogama	223	29.9	112	228	28.3	114
Salluit	244	15	106	248	14	107	Gravenhurst	229	31.1	116	233	29.3	118
Senneterre	232	27.3	114	236	25.6	117	Guelph	226	32.9	116	231	31	119
Sept Iles	250	20.8	119	254	18.8	121	Haliburton	231	30.6	116	235	28.7	119
Shawinigan	240	26.7	119	244	24.7	121	Hamilton	227	33	116	232	31.1	119
Sheldrake	252	20	120	256	18	121	Hanover	225	32.7	115	229	30.9	118
Sherbrooke	242	27.2	120	246	25.1	122	Hearst	219	28.7	109	224	27.3	112
Sorel	240	27.3	119	244	25.3	121	Hornepayne	217	29.5	108	221	28.2	111
St. Paul du Nord	246	23.5	119	250	21.5	121	Huntsville	228	30.9	115	233	29.1	118
St. Agathe-des-Monts	238	27.9	118	242	26	120	Ignace	201	31.4	103	205	30.3	106
St. Agapit	242	26	119	246	24	121	Ingersoll	225	33.7	116	230	31.8	119
St. Anne de Beaupre	243	25.5	119	247	23.4	121	Iroquois Falls	225	28.4	112	230	26.9	114
St. Augustin	259	16.1	121	263	14.1	123	Kapuskasing	222	28.5	110	226	27.1	113
St. Boniface	188	32	99	193	31.3	102	Kenora	194	31.6	101	199	30.7	104
St. Eloi	246	23.8	119	250	21.8	121	Kincardine	223	33	114	228	31.2	117
St. Hyacinthe	240	27.6	119	244	25.5	121	Kingston	234	30.5	118	238	28.5	121
St. Jean	239	28	119	243	25.9	122	Kirkland Lake	227	28.7	113	231	27.1	115
St. Jerome	238	28	118	242	26	121	Kitchener	226	33.1	116	230	31.2	119
St. Jean de Matha	239	27.4	118	243	25.4	121	Lindsay	229	31.5	116	234	29.6	119
St. Laurent	239	28	119	243	26	121	Little Current	223	31.5	113	227	29.8	115
St. Pacome	245	24.7	119	249	22.6	121	London	224	33.9	115	229	32	118
St. Pascal	245	24.5	119	249	22.4	121	Longlac	213	29.5	107	218	28.3	110
St. Simeon	245	24.3	119	249	22.3	121	Lynx	214	29.1	107	218	27.8	110
St. Stephen	249	24.8	123	252	22.5	125	Macdiarmid	209	30.4	106	214	29.2	109
Tadoussac	245	24	119	249	22	121	Madoc	232	30.8	117	236	28.8	120
Trois-Rivieres	241	26.8	119	245	24.8	121	Magog	241	27.4	120	245	25.3	122
Val d'Or	231	27.8	114	235	26.1	116	Manitoulin I.	221	31.9	112	226	30.3	115
Valleyfield	238	28.5	119	242	26.4	121	Matachewan	225	29.2	112	230	27.6	115
Vandry	239	26.1	117	243	24.2	119	Mattawa	229	29.8	115	234	28	117
Verdun	239	28	119	243	26	121	Mattice	220	28.7	109	224	27.2	112
Victoriaville	242	26.7	119	246	24.6	122	Mekatina	218	31.4	110	223	29.9	113
Waskaganish	230	25.3	111	234	23.8	113	Michipicoten	216	30.8	109	221	29.4	112
Wemindji	231	24	110	235	22.5	112	Midland	227	31.7	115	231	29.9	118
Windsor	241	27.1	120	245	25	122	Milne Inlet	259	7.1	98	263	6.6	99
ONTARIO							Movert	215	30.4	108	219	29	111
Apsley	231	30.8	116	235	28.9	119	Moosonee	226	26.2	110	230	24.7	112
Arnprior	234	29.4	117	238	27.5	120	Nakina	212	29.2	107	217	28	109
Bancroft	231	30.5	116	235	28.6	119	New Liskeard	227	29.2	113	232	27.5	116
Barrie	227	31.9	116	232	30	118	Newcastle	230	31.8	117	234	29.9	119
Bellefleur	232	31	117	236	29	120	Nipigon	209	30.9	106	213	29.7	109
Blind River	220	31.6	112	225	30	115	North Bay	228	30.1	114	232	28.4	117
Bracebridge	228	31.2	115	232	29.3	118	Oakville	227	32.7	116	232	30.8	119
Bradford	228	32.1	116	232	30.2	119	Oba	218	29.5	109	223	28.1	112
Brampton	227	32.6	116	232	30.7	119	Opasatika	221	28.6	110	225	27.1	112
Brockville	235	29.8	118	239	27.8	121	Orillia	228	31.6	116	232	29.7	118
Burlington	227	32.9	116	232	31	119	Oshawa	229	31.9	117	233	30	119
Carleton Place	234	29.6	117	238	27.6	120	Ottawa	235	29.1	118	239	27.2	120
Chapleau	220	30.4	110	224	28.9	113	Ottawa Is.	233	18.3	105	237	17.2	107
Chatham	223	34.8	115	227	33	118	Oulmet	208	31.2	106	213	30	109
Cobalt	227	29.3	113	232	27.6	116	Owen Sound	225	32.3	114	229	30.5	117
Cobourg	230	31.6	117	235	29.6	120	Pagwa River	216	28.9	108	220	27.6	110
Cochrane	225	28.3	111	229	26.8	114	Parry Is.	194	5.4	91	198	5.3	92
Collingwood	226	32.1	115	231	30.2	118	Parry Sound	227	31.2	115	231	29.4	117
Cornwall	237	29	119	241	26.9	121	Pembroke	232	29.5	116	237	27.6	119
Dalton	218	30.3	110	223	28.8	112	Penetanguishene	227	31.7	115	231	29.9	118
Deep River	232	29.4	116	236	27.6	118	Perth	234	29.8	118	238	27.9	120
Dryden	198	31.1	102	203	30.3	105	Petawawa	232	29.5	116	236	27.6	119
Elliot Lake	221	31.3	112	226	29.7	115	Peterborough	230	31.3	117	234	29.4	119
Emsdale	228	30.7	115	232	28.9	118	Pickle Crow	205	28.9	103	209	27.8	106
English River	202	31.4	104	207	30.3	107	Pictou	232	31	118	237	29	120
Espanola	223	31.2	113	227	29.5	115	Port Nelson	200	23.7	99	204	22.9	102
Foleyet	222	29.8	111	226	28.2	114	Port Stanley	224	34.1	116	229	32.3	119
Fort Albany	224	25.6	109	229	24.3	111	Ramore	226	28.6	112	230	27	115
Fort Frances	197	32.6	102	202	31.6	105	Red Lake	196	30.2	101	201	29.3	104
Fort Severn	212	23.8	103	216	22.9	105	Renfrew	233	29.6	117	237	27.6	119
Gananoque	234	30.2	118	238	28.2	121	Richmond Hill	228	32.2	116	232	30.3	119
Geraldton	212	29.8	107	216	28.5	109	Sand Lake	217	30.8	110	222	29.4	112
Gilmour	231	30.6	117	236	28.7	119	Sarnia	222	34.4	115	227	32.6	118
Goderich	223	33.4	115	228	31.6	117	Sault Ste Marie	217	31.9	111	222	30.4	113

Town/City	SATELLITE A			SATELLITE B			Town/City	SATELLITE A			SATELLITE B		
	Compass Azimuth	Dish Elevation	Dish Skew	Compass Azimuth	Dish Elevation	Dish Skew		Compass Azimuth	Dish Elevation	Dish Skew	Compass Azimuth	Dish Elevation	Dish Skew
Savant Lake	203	30.2	104	208	29.1	106	Rosthern	168	29.8	91	173	29.6	94
Schreiber	211	30.8	107	215	29.5	110	Saskatoon	167	30.3	91	172	30.2	94
Simcoe	226	33.6	116	231	31.6	119	Shaunavon	165	33	89	169	33	92
Sioux Lookout	200	30.7	103	205	29.7	106	Sherridon	178	24.8	94	183	24.4	97
Smiths Falls	234	29.7	118	239	27.7	120	Stanley	170	26.4	92	175	26.2	94
Steep Rock Lake	201	32	103	206	30.9	106	Swift Current	166	32.4	90	170	32.3	93
St. Catharines	228	32.8	117	233	30.8	120	Tisdale	173	29.5	93	177	29.2	95
St. Thomas	224	34	116	229	32.2	119	Uranium City	161	22.4	89	165	22.4	91
Stokes Bay	224	32.2	114	228	30.4	117	Watrous	170	30.8	91	175	30.6	95
Stratford	225	33.4	115	229	31.5	118	Weyburn	174	32.9	93	179	32.6	96
Sturgeon Falls	227	30.3	114	231	28.5	117	Wilkie	163	30	89	168	30	92
Sudbury	225	30.6	113	229	28.9	116	Yorkton	176	31.2	94	181	30.8	97
Sultan	221	30.3	111	225	28.8	114	ALBERTA						
Swastika	227	28.8	113	231	27.2	115	Athabasca	154	27.3	86	159	27.5	89
Tannin	202	31	104	207	29.9	106	Banff	151	30.9	83	156	31.3	86
Temiscaming	229	29.6	114	233	27.9	117	Bassano	157	31.6	86	162	31.8	89
Thessalon	219	31.8	111	224	30.2	114	Brooks	158	31.9	86	163	32	89
Thetford Mines	243	26.3	120	247	24.3	122	Calgary	154	31.2	85	159	31.4	88
Thunder Bay	206	31.7	106	211	30.5	108	Camrose	156	29.2	86	160	29.4	89
Timmins	224	29	111	228	27.4	114	Cranbrook	151	32.7	83	156	33.1	86
Tionaga	222	29.6	111	227	28.1	114	Drumheller	156	30.9	86	161	31.1	89
Tobermory	223	32	113	228	30.3	116	Edmonton	154	28.6	86	159	28.8	88
Toronto	228	32.4	116	232	30.5	119	Edson	149	28.2	83	154	28.6	86
Trenton	232	31.1	117	236	29.2	120	Fort Chipewyan	156	23.2	88	161	23.2	90
Trout Creek	228	30.4	115	232	28.6	117	Fort MacKay	156	24.8	87	160	24.9	90
Wallaceburg	222	34.7	115	227	32.9	118	Fort McMurray	157	25.3	87	161	25.4	90
Waterloo	226	33.1	116	230	31.2	118	Fort Vermilion	148	23.2	85	152	23.5	87
Welland	228	32.9	117	233	31	120	Grande Prairie	145	26.2	82	149	26.7	85
Whitby	229	32	117	233	30.1	119	Hanna	158	30.8	86	162	30.9	89
Whitney	230	30.3	116	234	28.4	118	Hines Creek	145	25.1	83	149	25.6	85
Windsor	221	35.3	115	225	33.5	118	Jasper	147	28.7	82	151	29.2	85
Wingham	224	33.1	115	229	31.3	118	Lac la Biche	156	27.4	87	161	27.5	89
Winisk	217	23.9	105	222	22.8	107	Lacombe	154	29.7	85	159	30	88
Woodstock	225	33.5	116	230	31.6	119	Leduc	154	28.9	85	159	29.1	88
MANITOBA							Lethbridge	156	32.8	85	161	33	89
Brandon	182	32.4	96	187	31.9	99	McLennan	148	25.9	83	152	26.3	86
Dauphin	181	31	96	186	30.5	99	Meander River	145	22.4	84	149	22.7	86
Emerson	188	32.9	99	193	32.2	102	Medicine Hat	160	32.5	87	165	32.6	90
Flin Flon	177	27.3	94	182	26.9	97	Peace River	147	25.3	83	151	25.7	86
Gimli	188	31.2	98	193	30.5	101	Red Deer	154	29.9	85	159	30.2	88
Grand Rapids	183	28.8	96	188	28.3	99	Stettler	156	29.9	86	161	30.1	89
Gypsumville	185	30.2	97	189	29.6	100	Vegreville	157	28.7	87	161	28.9	89
Hodgson	187	30.6	98	192	30	101	Vegreville	157	28.7	87	161	28.9	89
Lynn Lake	179	25	94	183	24.7	97	Vermilion	159	29	87	164	29.1	90
Minnedosa	182	32	96	187	31.4	99	Wetaskiwin	155	29.2	85	159	29.4	88
Morden	186	32.8	98	191	32.2	101	BRITISH COLUMBIA						
Portage la Prairie	185	32.1	98	190	31.4	101	Ashcroft	142	30.4	79	147	31.1	82
Norway House	186	27.8	97	191	27.2	100	Atlin	125	18.7	75	129	19.7	77
The Pas	178	28.3	94	183	27.9	97	Chemainus	139	31.7	76	144	32.5	79
Thompson	186	25.9	97	191	25.3	99	Courtenay	137	30.6	75	142	31.5	78
Winnipeg	188	32	99	193	31.3	102	Dawson Creek	142	25.4	81	147	26	84
York Factory	200	23.7	100	204	22.9	102	Duncan	139	31.9	76	144	32.7	79
SASKATCHEWAN							Esquimalt	140	32.2	76	145	33.1	79
Assiniboia	169	33.1	91	174	32.9	94	Fort Grahame	136	23.9	79	141	24.6	81
Beauval	165	27.1	90	169	27	93	Fort Nelson	138	21.9	81	142	22.5	83
Biggar	165	30.4	90	170	30.4	92	Ft St. John	141	24.8	81	146	25.4	83
Estevan	175	33.5	94	180	33.1	97	Hazelton	133	24.5	77	137	25.3	79
Fond du Lac	164	22.6	90	168	22.6	92	Hudson Hope	140	24.8	80	144	25.4	83
Kamsack	177	30.8	94	182	30.4	97	Kamloops	144	30.7	79	149	31.3	82
La Ronge	169	27.1	91	174	26.9	94	Kelowna	145	31.7	80	150	32.3	83
Lloydminster	161	29.1	88	165	29.1	91	Kitimat	132	25.3	75	136	26.2	78
Maple Creek	162	32.7	88	167	32.8	91	Ladysmith	139	31.6	76	144	32.5	79
Melfort	171	29.5	92	176	29.3	95	Lilloet	141	30.3	78	146	31	81
Moose Jaw	170	32.2	91	175	32	95	McLeod Lake	139	25.7	79	143	26.4	82
Nokomis	171	31	92	176	30.8	95	Nanaimo	139	31.4	76	144	32.3	79
North Battleford	164	29.7	89	169	29.6	92	Nelson	149	32.4	82	154	32.9	85
Regina	172	32.1	92	177	31.8	95	New Westminster	140	31.6	77	145	32.4	80
Rosetown	165	31	90	170	30.9	93	Penticton	145	32	80	150	32.7	83

Town/City	SATELLITE A			SATELLITE B			Town/City	SATELLITE A			SATELLITE B		
	Compass Azimuth	Dish Elevation	Dish Skew	Compass Azimuth	Dish Elevation	Dish Skew		Compass Azimuth	Dish Elevation	Dish Skew	Compass Azimuth	Dish Elevation	Dish Skew
Port Alice	134	29.2	74	139	30.2	77	NORTHWEST TERRITORY						
Port Renfrew	138	31.9	75	143	32.9	79	Arctic RedRiver	120	11.6	79	124	12.3	81
Prince George	139	26.8	79	144	27.5	82	Banks Is.	126	7.9	86	130	8.2	87
Prince Rupert	130	24.7	74	134	25.7	77	Fort Franklin	132	15.3	83	136	15.8	84
Quesnel	140	27.8	79	145	28.5	82	Fort Good Hope	126	13.6	81	130	14.2	82
Queen Charlotte Is.	127	25.1	72	132	26.3	75	Fort Liard	136	20.3	81	140	20.9	83
Revelstoke	147	30.7	81	152	31.2	84	Fort Norman	130	15.4	82	134	15.9	83
Saanich	140	32.2	76	145	33.1	79	Fort Reliance	158	19	89	162	19	91
Sidney	140	32	76	145	32.9	79	Fort Simpson	138	19.1	83	142	19.6	85
Simoom Sound	135	29	75	139	30	78	Fort Smith	154	21.8	87	159	21.9	90
Squamish	140	31	77	145	31.9	80	Ft McPherson	120	11.4	79	124	12.1	80
Stewart	130	23.1	75	134	24.1	78	Ft Providence	143	20	84	148	20.3	86
Telegraph Creek	128	20.9	76	132	21.8	78	Ft Resolution	150	20.5	87	155	20.7	89
Trail	148	32.8	81	153	33.4	84	Hay River	147	20.7	85	151	20.9	87
Vancouver Is.	136	30	75	141	30.9	78	Holman Island	135	10.5	86	139	10.7	88
Vancouver	140	31.5	77	145	32.4	80	Inuvik	120	10.9	80	124	11.5	81
Vernon	146	31.3	80	150	31.9	83	Jean Marie Rvr	139	19.4	83	143	19.9	85
Victoria Beach	189	31	99	194	30.3	102	Melville Is.	144	6	89	148	6	90
Victoria	140	32.3	76	145	33.1	79	Nahanni Butte	135	19.5	81	140	20	83
Williams Lake	141	28.8	79	146	29.5	82	Norman Wells	129	14.8	81	133	15.3	83
NUNAVUT							Port Radium	139	15.1	85	143	15.3	87
Amadjuak	252	12.8	106	255	11.7	107	Rae	145	18.6	86	149	18.8	87
Arctic Bay	253	7.1	97	257	6.7	98	Snowdrift	155	19.4	88	159	19.4	90
Bathurst Inlet	158	14.8	90	162	14.8	91	Tuktoyaktuk	120	10	81	124	10.5	82
Bathurst Is.	211	5.4	92	215	5.2	93	Victoria Is.	149	10.5	89	154	10.5	90
Cambridge Bay	165	12.4	91	169	12.3	92	Wrigley	134	17.3	82	138	17.8	84
Cape Dyer	268	7.6	108	272	6.4	109	Yellowknife	148	19	86	152	19.2	88
Cornwallis Is.	233	6.1	93	237	5.9	94	YUKON TERRITORY						
Devon Is.	261	5.4	96	265	5	97	Big Salmon	122	2216.3	76	127	17.2	78
Eskimo Point	197	19.8	97	201	19.3	99	Carmacks	121	15.8	75	125	16.7	77
Frobisher Bay	257	11.7	107	261	10.5	109	Dawson	118	13.3	75	122	14.3	77
Gjoa Haven	198	12.5	94	202	12.2	96	Forty Mile	117	12.8	75	121	13.7	77
Igloodik Is	247	10.3	100	251	9.6	101	Keno Hill	121	14.4	77	125	15.2	79
Kangirsuk	251	15	110	255	13.7	111	Klondike	118	13.4	75	122	14.3	77
Lake Harbour	254	12.8	108	258	11.6	109	Mayo Landing	121	14.5	77	125	15.3	78
Mackenzie King Is.	134	4	89	138	4	90	Old Crow	116	10.3	77	120	11.1	79
Padlei	190	19.3	96	194	18.8	98	Stewart River	118	14	75	122	14.9	76
Padloping Is	268	7.7	107	271	6.6	108	Tagish	124	17.9	75	128	18.9	77
Pangnirtung	264	9.2	107	267	8	108	Teslin	125	18.5	76	129	19.3	78
Pelly Bay	223	11.9	97	227	11.4	98	Watson Lake	129	19.4	78	134	20.2	80
Qurlurtuuq	142	13.6	87	146	13.7	88	Whitehorse	123	17.4	75	127	18.3	77
Rankin Inlet	205	17.8	98	209	17.2	100	CANADIAN ARCTIC ISLANDS						
Repulse Bay	228	13.4	99	232	12.7	100	Prince Charles Is.	254	10.3	102	258	9.5	103
Resolute	231	6.5	93	235	6.2	94	Prince of Wales Is	197	8.3	93	201	8.1	94
Resolution Is.	259	12.2	110	263	10.9	112	Prince Patrick Is.	121	4.2	87	125	4.3	88
Somerset Is.	226	8	94	230	7.7	95	Queen Elizabeth Is	256	2.9	92	259	2.8	93
Southampton Is.	230	14.9	101	234	14.2	102							
Spence Bay	212	11.4	95	216	11	97							
Tavani	200	18.9	97	204	18.3	99							
Wager Bay	213	14.7	97	217	14.1	99							
Whale Cove	201	18.3	97	206	17.8	99							

NOTES